



TROPHIC REGIME OF ANSERIFORMS PRESENT IN THE LOW BASIN OF PRUT RIVER FROM MOLDOVA REPUBLIC

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SYNOPSIS

Our study is focused on the trophic regime, analysing the food of the anseriforms' species in the low basin of Prut River; we recorded that 69% species are omnivorous birds, 24% species are seeking vegetal food and only 7% species eat invertebrates or small vertebrate animals. We give data about the food regime of the recorded anseriforms species in this area – swans, geese, shelducks, ducks and sawbills. The trophic regime varying from vegetal food to zooplankton, worms, insects, molluscs and small fishes

INTRODUCTION

On the territory of R. Moldova, the lower valley of Prut River has protection status, there existing one the three scientific natural reserves from Moldova: "the Low Prut River" (HG 209/1991), situated near Slobozia Mare village, in the Cahul County, between the villages Valeni in south, respectively, Caslita in north. We must notice the status of this wetland area like Ramsar situ (no. 1029), under the name "the lakes of Low Prut River", with the wetland flora and fauna's protection like first priority.

This protected area includes the Belevu Lake and other small natural lakes, but also the Prut River's valley, covering a total surface about 1755.4 hectares. The Belevu Lake represents around 2/3 from the protected area (929 ha), but there exist another aquatic habitats (small natural lakes and water courses, channels), terrestrial habitats (wetland forests, bushes areas, dry and wetland grasslands) and swampy habitats (on the limit between waters and land) in the protected perimeter. In the area, there are another two important natural lakes: Manta (730 ha surface, between Pascani and Manta villages) and Iezer (500 ha surface, in Colibasi village) and different small lakes and swamps (Cahul, Crihana Veche, Pascani, Vadu lui Isac, Branza, Valeni, Caslita-Prut).

Surrounding, we can see agricultural lands, pastures and grazing lands nearest the natural reserve.

The climate is temperate-continental, with very cold winters (the minimum temperatures can touch 28 °C below zero), while the summers are dry and really hot (the maximum temperatures can exceed + 41 °C). If the Manta Lake and Iezer Lake can freeze till 60% of its surfaces, the Beleu Lake is never frozen due to the constant incomings of warmer waters from the Prut River through two small branches. The rainfalls have medium values about 420 – 450 mm. The flooding represents a constant phenomenon in this area, especially in the spring's ending and the summer's beginning, for a period about 30 – 50 days.

The flora and vegetation form a natural mosaic, from the swampy areas and aquatic plants (ones very rare and strictly protected like *Trapa natans*, *Nymphaea alba* or *Sagittaria sagittifolia*) till the meadow wetland forests, where we mention the special presence of *Vitis sylvestris* (on the Prut River valley and in the north-eastern part of the Beleu Lake). The reed covers large surfaces on the lakes; for example, on the Iezer Lake, the reeds cover more than 40% from the whole surface.

The fauna presents a high diversity; the invertebrates are dominant like species number and populations in all habitats. The fishes' fauna is represented by 23 species, ones of them very important through an economical view (*Cyprinus carpio*, *Silurus glanis*, *Esox lucius*, *Alosa pontica* or *Stizostedion lucioperca*). The amphibians are represented by species like *Bombina bombina*, *Hyla arborea*, *Bufo viridis*, *Rana dalmatina*, *Pelophylax ridibundus*, *Pelophylax kl. esculentus*, *Lissotriton vulgaris* and *Triturus cristatus*, while the reptiles are present through a smaller number of species (*Emys orbicularis*, *Lacerta viridis*, *Lacerta agilis*, *Natrix natrix*, *Natrix tessellata*, *Anguis fragilis* and *Coronella austriaca*, the last two species being very rare). The birds' fauna includes 185 species, ones of them accidentally present in this area and others having special protection status (included in the Red Book of the Animals from R. Moldova). Between the mammals, dominant are the rodents group, but we notice the presence of *Mustela erminea* and *Lutra lutra*.

METHODS AND PERIOD OF STUDY

Our fieldwork researches began in December 1998 and are going on. If during the first six years, we were monitoring the whole birds' fauna (in order to finalise a scientific paper to obtain the bachelor degree in Biology, in 2006), in the last two years, we were focusing on the aquatic birds, especially on the anseriforms group.

We established 11 sites of study along the Low Prut River, between the Cahul city and Giurgiulesti village, following not only the three important lakes, but all the small lakes and swamps, respectively, the nearest meadow forests from the area.

We used various study methods: transects and fixed point observations, trips with small boats, visits in the breeding colonies, capture and ringing using special nets, songs' identification, especially for the nightly active birds but also for the passerines from thick reed bands.

RESULTS AND DISCUSSIONS

The birds' presence in a area is influenced by various and different factors – the suitable habitats, the food resources, sites for breeding and feeding, natural and human threats, etc. The mosaic of habitats offering favourable sites for breeding and refuge, the availability of food due the permanent oscillations of the water's level, the presence of large swampy areas and aquatic surfaces, but also, the terrestrial offer of food resources attract numerous bird species, including anseriform species, in the Low Prut River valley.

In the study area, the anseriform species are present all the year; ones are breeding there, others are visiting the area just during the winter or in the migration period, but the majority are present constantly, the northern population taking the place of the breeding population that are going to south in autumn.

The breeding species are represented by *Cygnus olor*, *Anser anser*, *Anas platyrhynchos*, *Anas strepera*, *Anas crecca*, *Anas querquedula*, *Anas clypeata*, *Aythya ferina* and *Aythya nyroca*, ones with big effectives. This is possible due the enough quantity of various food resources available in this perimeter. The lakes Manta, Vadu lui Isac, Iezer, Branza and Beleu have 1.5 – 2 meters depth, which permit the development of rich aquatic vegetation (*Hydrocharis morsus-ranae*, *Lemna minor*, *Wolfia arrhiza*, *Salvinia natans*, *Azolla* sp., *Nymphaea alba*, *Trapa natans*, *Psita stratiotes*, *Paspalidium geminatum*, *Potamogeton natans*, *Myriophyllum demersus*, *Ceratophyllum demersus*, etc.). There exist also various invertebrate species (gastropods and other molluscs, worms, crustaceans, insects).

We noticed the existence of a seasonal and correlated zooplankton and phytoplankton's dynamic. During the spring, the species representing the Rotifera and Cladocera are dominant species and we found them in the stomachs from adults and chicken of the duck species like *Anas platyrhynchos*, *Aythya nyroca*, *Anas querquedula*, *Aythya ferina* and *Anas crecca*. At the beginning of summer, the small cladoceras belonging to the genus *Moina* and *Simocephalus* are becoming dominant, being replaced later by species of the genus *Daphnia*, *Bosmina* and *Cyclops*, found by us in the chicken's stomachs for species like *Cygnus olor*, *Anser anser*, *Anas crecca*, *Anas platyrhynchos*, *Anas querquedula*, *Anas clypeata* and *Aythya ferina*. In the autumn, the species of Rotifera (*Asplanchna* sp., *Keratella* sp., and *Brachionus* sp.) and Copepoda (*Diaptomus* sp., *Mesocyclops* sp., *Cyclops* sp. and, very rarely, *Daphnia* sp.) become dominant, representing the food for the anseriform species during the migration period.

The bill of anseriforms present adaptations to take food not only from the water's filter, but also through the small hooked tip of bill, these birds can break or pull out aquatic plants; the sawbills (*Mergus* sp.) present small and thin "teeth" on the bill's margins. For this reason, the feeding regime of the anseriforms is varying from one group to other. Analysing the stomach's content (obtained directly from hunters or exemplars found died in the territory – probably, abandoned by illegal hunters) and through directly observations, we saw that the trophic regime of this group of aquatic

birds is varying from vegetal food or animal food strictly to mixed food (omnivore species) – figure 1.

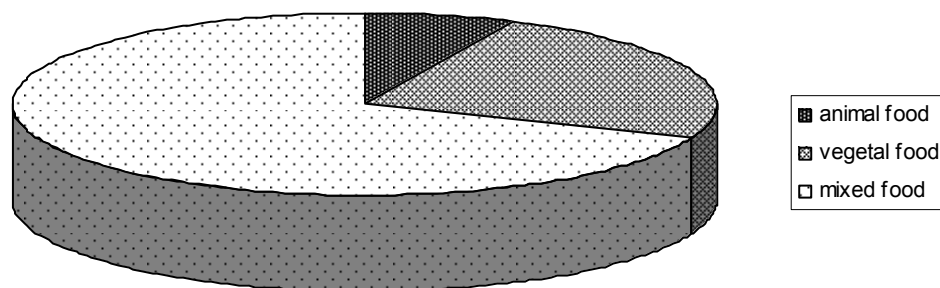


Figure 1 – The feeding regime of the anseriform species in the Low Prut River's area

The swans (*Cygnus olor* is a partial migratory species on the lakes Manta, Crihana Veche, Colibasi, Vadul lui Isac, Branza and Beleu, while *Cygnus cygnus* is a rare winter visitor, especially, on the Beleu Lake) are omnivorous species, their feeding regime depending by the season. During the later spring and summer, the swans are eating aquatic plants (*Lemna minor*, *Wolfia arrhiza*, *Salvinia natans*, *Hydrocharis morsus ranae*, *Myriophyllum demersus*, *Ceratophyllum demersum*) picking up from the no depth waters. Together with these plants, the swans can eat small invertebrates (*Limnaea sp.*, *Planorbis sp.*, *Daphnia sp.*, *Bosmina sp.* and *Cyclops sp.*). During the winter time, the swans' feeding regime is formed by small aquatic animals like worms, crustaceans, insects (especially, from Coleoptera order), molluscs and small fishes.

The geese are represented in the study area by species like *Anser anser*, *Anser albifrons*, *Anser erythopus* and *Branta ruficollis*. The Greylag Goose (*Anser anser*) is partial migratory species in R. Moldova and is the only one breeding goose species in the Low Prut River's perimeter. During the summer, this goose has a vegetal trophic regime, preferring young plants or leafs (*Sparganium erectum*, *Alisma plantago-aquatica*, *Carex riparia*, *Potamogeton natans* and *Salvinia natans*). In the autumn and winter's beginning, the vegetal food representing by aquatic plants like *Hydrocharis morsus-ranae*, *Myriophyllum verticillatum*, *Ceratophyllum demersum* and *Vallisneria spiralis* is completed with animal food (invertebrates from not depth waters). During the winter, the Greylag Goose use to search food in the agricultural lands surrounding the lakes, seeking different seeds and cereal fields. We notice a special feeding movement of this goose species between the August's ending and October's beginning, in order to accumulate a thick grease stratum for the winter period.

The other three goose species present in this perimeter are winter visitors, appearing in the middle December and leaving the territory no later than the last days

of February. During the daytime, the birds are moving to the cereal fields for feeding and during the nights the geese are staying on the lakes' surfaces.

The Shelducks (*Tadorna tadorna* and *Tadorna ferruginea*) are present with very small effectives, during the summer, only in the natural reserve "Low Prut River", on Manta Lake and Iezer Lake. We have not enough own data about their food.

The ducks represent the most diverse group of anseriform species in the area; we recorded 12 species - *Anas platyrhynchos*, *Anas strepera*, *Anas acuta*, *Anas penelope*, *Anas crecca*, *Anas querquedula*, *Anas clypeata*, *Aythya marila*, *Aythya fuligula*, *Aythya ferina*, *Aythya nyroca* and *Oxyura leucocephala*. All of them are omnivorous birds seeking for aquatic plants (*Potamogeton pectinatus*, *Salvinia natans* and *Ceratophyllum demersus*), but also for zooplankton, molluscs (*Limnaea* sp. and *Planorbis* sp.), worms and insects, especially, during the winter period;

The sawbills (*Mergus albellus* and *Mergus merganser*) are rarely winter visitors in the study territory and are carnivorous birds, eating small fishes, molluscs, worms and insects. On the 17th January 2007, a fisherman found in an underwater net one died exemplar of Smew (*Mergus albellus*) and he accepted to give it us. In the stomach of bird we found small fishes belonging to the species *Esox lucius* and *Perca fluviatilis*, crustaceans, including small exemplars of *Astacus fluviatilis*, but also, *Limnaea stagnalis* from the gastropod groups.

CONCLUSIONS

The feeding regime of the anseriform species is varying from one group to other.

The swans are omnivore species – during the summer, are searching, especially, aquatic plants swallowing too small invertebrates with the plants; in the winter time, the swans are eating animal food.

The geese are seeking only for vegetal food, looking especially for cereals fields, but the Greylag Goose (*Anser anser*) eats also small invertebrates during the breeding season.

We have not enough own data about the shelducks' food.

The ducks are omnivorous birds seeking for aquatic plants, but also for zooplankton, molluscs, worms and insects, especially, during the winter period.

The swabills are feeding just animal food.

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